

CS 392/681
Introduction to Linux and C
Lab 0
DUE: 9/15/2005

Introduction: Most of the assignments given out during this semester will require you to know some basic UNIX (Linux) commands and programming skills in C and C++. The objective of this assignment is to put you on the path towards expertise in these topics. You are expected to learn more on your own about C and UNIX as and when needed throughout the semester.

References: C:

<http://www.cyberdiem.com/vin/learn.html>
<http://members.tripod.com/~johnt/c.html>
<http://www.cs.cf.ac.uk/Dave/C/CE.html>

Unix:

<http://doors.stanford.edu/~sr/computing/basic-unix.html>

Introduction to C: Implement the following in C:

PROBLEM – 1

Write a program that declares an integer, a short integer, a long integer, a float, a double, an integer array, a character array. When executed, the program should print the memory address and size of all its variables.

PROBLEM – 2

Write a program that takes a text filename and an unsigned integer n at the command prompt (See http://www.mattjustice.com/cnotes/c_cmdline.html) and displays the *last n non-blank* lines from the text file. A blank line is a line containing only the new line character. If n is 0 or negative your program should display an error message. If n is larger than the number of non-blank lines in the file then your program should display all the lines in the file except the blank lines. Use `argv`, `argc` for reading in the command line. Do not make any assumptions on the maximum value of n that will be input and the size of individual lines; use dynamic memory - `malloc()`, `calloc()`, `realloc()` and `free()`

PROBLEM – 3

Use all available string functions (`strcpy`, `strcmp`, `strlen`, `strstr` etc.) in a program. Be creative in defining this problem. Extra credit will be given for small “cute” programs.

Introduction to UNIX:

- 1) Categorize the following commands as one of 1)File and Directory Management, 2) User Management, 3) Process Management, 4) Compiler and Linker, 5) Communication, 6) Editing, or 7) Miscellaneous commands. Also give a brief (one to four line descriptions) for each command. You should describe their use and the most important/popular switches/options used with these command.

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|------------|-----------|
| 1) grep | 7) ssh |
| 2) find | 8) sftp |
| 3) man | 9) ls |
| 4) slocate | 10) chmod |
| 5) strace | 11) chown |
| 6) vi | 12) chgrp |

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|---|-----------------|
| 13) passwd | 29) ftp |
| 14) useradd and adduser | 30) more / less |
| 15) su | 31) cat |
| 16) whereis | 32) tar |
| 17) lsmod | 33) top |
| 18) insmod | 34) ps |
| 19) gcc | 35) kill |
| 20) gdb | 36) df |
| 21) make | 37) last |
| 22) fdisk and cfdisk | 38) gunzip |
| 23) pipe, >/>> redirection
operators | 39) patch |
| 24) ln | 40) bzip |
| 25) rm | 41) bunzip |
| 26) cp | 42) mkdir |
| 27) mv | 43) rmdir |
| 28) ld | |

Handin:

You should submit assignment through my.poly drop box no later than 12 midnight on the due date. You must zip all files related to the assignments and use the following convention to name the zip file: <First Name>_<Last Name>_<Lab#>.zip
REMEMBER IF YOU DO NOT USE THIS NAMING CONVENTION YOUR ASSIGNMENT WILL NOT BE GRADED AND YOU WILL NOT RECEIVE ANY CREDIT.